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ABSTRACT

Since an increasing number of people today are spending leisure time in the out-of-doors, there is a need to develop society's awareness and understanding of the environment, develop outdoor skills, and stress factors in outdoor activity participation. This unit is designed to provide enough information and skill development to enable educable mentally retarded students at the intermediate and junior high level to successfully participate in some of the popular outdoor activities. Eight topics are included as follows: boating, riflery (BB guns), fire building, fishing, archery, microscope activities focusing on nature studies, tenting and outdoor lab sessions. There is a suggested unit time line for each topic with culminating work involving field experience. Specific schedules are included in each topic area and appendices provide relevant background information, diagrams and appropriate techniques. (MLB)

environmental education curriculum

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ENVIRONMENTAL EDUCATION PROJECT
ESEA TITLE III, SECTION 306

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A unit developed by the Environmental Education Project Staff, March, 1974, for Level II and III Educable Mentally Retarded Special Education classes.

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ENJOYING THE ENVIRONMENT

The work presented or reported herein was performed pursuant to a grant from the United States Office of Education. However, the opinions and material expressed herein do not necessarily reflect the position or policy of the U. S. Office of Education, and no official endorsement by the U. S. Office of Education should be inferred.

Foreword

An ever increasing number of people today are spending leisure time in the outdoors. As a result many people have a need to 1) develop an awareness and understanding of the environment, 2) develop outdoor skills, and 3) learn how to participate in outdoor activities safely.

This unit presents a few of the many popular outdoor activities. It is designed to provide enough information and skill development to enable educable mentally retarded students at the intermediate and junior high level to successfully participate in the activities. Emphasis is placed on proper use of the environment while participating in outdoor activities.

The unit includes eight topics: 1) Boating; 2) Riflery (BB Guns); 3) Fire Building; 4) Fishing; 5) Archery; 6) Nature through a microscope; 7) Tenting; and 8) Field Trip. Emphasis is placed on the field activities. It serves as a teaching station and provides opportunity for practice. However; essential pretrip activities for the classroom work are presented to insure greater success on the field trip.

Relevancy of this unit is insured as students learn facts and skills that have carry-ever value for leisure time participation in the outdoors.

Thad Whiteaker

Thad Whiteaker
Program Specialist - Special Education

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My sincere gratitude is extended to the program specialists for their tireless efforts in developing this unit. Curriculum development and revision has extended the working days for these staff members. My personal thanks are given to Glenn Clarkson, Bob King, and Thad Whiteaker for an outstanding job.

The enclosed curriculum is the result of input from the project's paraprofessionals and volunteers, special education teachers, Community Council members, parents, students, and interested lay citizens.

With the deepest appreciation, I acknowledge the work of the secretarial team. The constant revisions, pressures, deadlines, and demands for quality work were handled in a most outstanding manner by Dorothy Booher, Rita Dreiling, and Peggy Ketter. A special thank you for a job well done goes to T. W. Mack who designed and put on stencils the numerous illustrations.

Donald French
Project Coordinator

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Goal and Objectives

Unit Goal: 1) To develop a knowledge, basic skills and safe use of outdoor leisure time activities.

Topic Goals:

1) The students will demonstrate an understanding of proper handling techniques and safety involved in row boating.

2) The students will use proper rifle handling techniques and observe proper safety rules.

3) The students will be able to build a fire (as a member of a group) for cooking or for warmth and recognize the hazards involved.

4) The students will be able to successfully use fishing equipment and participate in a fishing session on the field trip.

5) The students will demonstrate an understanding of proper bow handling techniques and safety rules.

6) The students as a part of a three to four man team, will be able to pitch and take down a tent.

7) The students will demonstrate an understanding of the techniques involved in successfully using a microscope.

Unit Time Line

DAY

Before the field trip:

Schedule equipment such as air rifles, tents, oars, lifejackets, and archery items from the Environmental Education Office.

14 Submit request for field trip(s). If class is to do optional overnight campout, obtain written permission from parents for their child to participate. Be sure that the principal is aware of all field trip details.

Begin classroom study. All topics in the unit should be taught prior to the first field trip. NOTE: Classes not participating in optional overnight campout need not study archery prior to the first field trip.

7 Meet with program specialist to go over details of the field trip.

1 Contact program specialist to affirm readiness for trip on the following day. Divide the students into three groups and give them the instructions they will need to be fully prepared for the trip.

0 First Field Trip

After the First Trip:

1 Classes not participating in overnight study archery topic.

Classes doing overnight campout should study Topic III (Clothes for Camping) in the Camping Skills unit (This unit will be provided to local teachers by the Topeka Environmental Education Project).

2 Meet with program specialist to go over details for second field trip and the overnight campout. Check to see that the students have written permission to participate in the overnight. Those students that cannot take part in the overnight will be brought back to school at the regular dismissal time. Advise their parents to make arrangements to pick them up.

0 Second Field Trip

1 Classroom Follow-up

TOPIC I: Boating

Goal:

1. The students will demonstrate an understanding of proper handling techniques and safety involved in row boating.

Student Activities	Teacher Suggestions
A. Show and Discuss Rowboat Equipment 1. View and discuss equipment associated with rowboats.	A. Show and Discuss Rowboat Equipment 1. This discussion should concentrate on the equipment that is necessary to operate a rowboat safely. 2. List these items on the board: 1) Oars; 2) Oarlocks; and 3) Lifejackets. Ask the class to give their definition of the function of each item. 3. After getting student ideas on each item, show each item and discuss it. The Topeka Environmental Education Project will furnish oars, oarlocks, and lifejackets to local teachers. 4. OARS - Two oars are necessary to row a boat. When you use two you are rowing--not paddling. When you use only one oar, you are paddling. A person sits in the middle seat of a boat and pulls on both oars to propel a rowboat in a straight line. The boat can be guided right or left by pulling on one oar while letting the other rest. To turn left, pull on the right oar only. To turn right, pull on the left oar only. A person actually rows backward. 5. OARLOCKS - An oarlock is a metal device used to secure the oars to the boat. There is an oarlock for each oar. 6. LIFEJACKETS - While a boat can be operated without wearing a lifejacket, a person should consider it an item as necessary as the oars. No person should get in a boat without wearing a lifejacket. It does very little good to just lay them in the boat and not wear them.

Student Activities	Teacher Suggestions
	7. Appendix I contains sketches of a rowboat and its necessary equipment.
B. Boating Safety: A Discussion	B. Boating Safety: A Discussion
1. Discuss boating safety rules.	1. Appendix II contains a list of seven boating safety rules. 2. The rules contained in Appendix II are not in order of importance. You may wish to add other rules to this list. 3. Before discussing these rules have the students give you their versions of rules that would apply to boating safety. List the student's rules on one section of the chalkboard. 4. After listing the student rules, list the safety rules from Appendix II. Compare the two lists. 5. Discuss the rules as to what they really mean to a boater. Example: "Never stand up in a boat." Ask the students to help decide why it would be unsafe to stand up in a boat--especially a rowboat.

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TOPIC II: Riflery (BB)

Goal:

2. The students will use proper rifle handling techniques and observe proper safety rules.

Student Activities	Teacher Suggestions
A. Discussion: The BB Air Rifle	A. Discussion: The BB Air Rifle
1. View sketch of an air rifle. Discuss the role various parts of the rifle plays in the firing of the gun.	1. Appendix III contains a sketch of a model 99 Daisy Air Rifle. Each major part of the rifle is labeled. 2. You may duplicate the appendix for class use. 3. Discuss with the class the function of each part of the rifle as shown in the sketch. These functions are furnished in the appendix too.
B. Discussion: Gun Safety	B. Discussion: Gun Safety
1. Discuss gun safety.	1. Appendix IV contains a list of gun safety rules. 2. Write the rules on the board--one at a time. Ask the class to give you their interpretation of what the rule is really saying to them. 3. Obtain an air rifle. Use it to visibly demonstrate the rules as you discuss them. Be very sure that the gun is not loaded or cocked. 4. Demonstrate the rules in a positive manner. Example: "Treat every gun as if it were loaded and ready to shoot" - in demonstrating this rule avoid pointing the muzzle of the gun in anyone's direction and be sure to keep your finger off the trigger. 5. Do not ask the students to bring their air rifles to school to use in the demonstration. You should make provisions to provide a gun due to safety implications. The Topeka Environmental Education Project will provide air rifles for local teachers.

Student Activities	Teacher Suggestions
C. Riflery: Targets and Scoring	C. Riflery: Targets and Scoring
1. Discuss scoring involved in rifle target shooting.	1. Appendix V is a sketch of a target used in BB riflery. It is an official size target for air rifles. 2. Draw a target (enlarged) on the board to use in discussing the correct scoring methods. 3. It is best to fire only five shots into a target before adding the score. 4. There are two points to consider in scoring. They are: 1) shots touching a scoring ring receive the higher value; and 2) shots outside of the scoring ring are scored as misses. 5. Simulate shots on the target drawn on the board by putting dots at various points in the scoring rings. Have the student add the score. Be sure to put some shots on the rings and some outside the rings.
D. Firing Positions	D. Firing Positions
1. Practice the sitting, prone, and standing positions for firing an air rifle.	1. Appendix VI contains sketches that show and explain the sitting, prone, and standing position. These will be the three most common positions used in firing the air rifle. 2. Have the students practice each position. Do not actually use the air rifles for this practice. The important thing is to be able to assume the position. 3. Do not be alarmed if some students are not able to assume a particular position as shown in the sketches. Some students may need their own unique position.

Student Activities

E. 'Dry Firing' the Air Rifle

1. Practice cocking, aiming, and firing an unloaded air rifle in the classroom.
2. Emphasize gun safety while engaged in practice.

Teacher Suggestions

E. "Dry Firing" the Air Rifle

1. "Dry firing" means to practice the safety and skills of firing a gun using an unloaded weapon.
2. Double check the air rifles to make sure they are not cocked and not loaded before allowing the students to handle them.
3. Briefly reemphasize the safety rules previously studied.
4. Appendix VII contains information relative to setting up a firing range both indoors and outdoors. Use this as a guide for setting up a range in the classroom for "dry firing." Modify the range set-up to fit your own classroom situation.
5. The Topeka Environmental Education Project will furnish BB rifles and targets to local teachers.
6. Set up targets following instructions in Appendix VII.
7. There will be four shooting stations on the firing line. Lay a BB gun on the floor at each station. The muzzle of the guns should be pointing "downrange" (toward the target). Have four shooters take a sitting position--a shooter by each gun. Instruct the shooters not to pick up a gun until they are told to do so.
8. Tell the shooters to pick up their rifles and cock them. Check to see that the rifles are pointing downrange while they are being cocked. Be alert to those that need help with cocking. After cocking the rifles, the shooters should "aim and fire."
9. After firing, the shooter should lay the gun on the floor (muzzle downrange) and remain seated.
10. Repeat the firing process described above three or four times then rotate groups.

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TOPIC III: Fire Building

Goal:

3. The students will be able to build a fire (as a member of a group) for cooking or for warmth and recognize the hazards involved.

Student Activities	Teacher Suggestions
A. Preparation of A Campfire Area: A Discussion 1. Discuss the way to prepare an area to build a safe fire.	A. Preparation of A Campfire Area: A Discussion 1. Appendix VIII contains pointers for the proper selection and preparation of a campfire area. 2. Use the information contained in the appendix as your guide in the discussion. 3. Emphasize that a fire should be only large enough to do a particular job. Small fires are usually sufficient.
B. Tinder, Kindling, and Fuel 1. View samples of tinder, kindling, and fuel. Discuss how each one is used in building fires.	B. Tinder, Kindling, and Fuel 1. Prepare samples of tinder, kindling, and fuel for the class to see. In the case of tinder you will need to prepare samples of different kinds of tinder. 2. Listed below are explanations of tinder, kindling, and fuel. They are listed in the order they would be used in fire building. (1) TINDER - This is the material you light with the match. The pieces of tinder should be no thicker than a matchstick. Shavings, fine twigs (especially from evergreen trees), bundles of tops of bushes, and thin pieces of bark make good tinder. Paper also makes good tinder, but it is considered more skillful to build fires without it.

Student Activities	Teacher Suggestions
	(2) KINDLING - Kindling is larger wood than tinder. Dry sticks and twigs that range in size from pieces just larger than tinder up to pieces as thick as the thumb and from six to twelve inches long would be classified as kindling. Larger pieces of wood may be split for kindling. (3) FUEL - Fuel is the real fire material. This type wood should be firm and range in size from just larger than kindling to good-sized logs, depending on their use. 3. See Appendix IX for tips on gathering wood for campfires.

Student Activities	Teacher Suggestions
C. Fire Safety: A Discussion	C. Fire Safety: A Discussion
1. Discuss some general safety tips that apply when preparing and using campfires.	1. Listed below are seven safety tips to consider when preparing and using campfires. You may think of others to add. 2. Discuss each tip. Read only a portion of the tip and have the students give their thoughts that might justify the tip. Example: in point #1, read the portion which states "Don't build fires when you are alone. Ask the students to give reasons why you should not build fires by yourself. 1) Don't build fires when you are alone. If the fire were to get out of hand, or you were to accidentally catch on fire, you probably would not be able to handle either situation by yourself. 2) Don't "play" with fire. It is very easy to get a spark blown into an eye or the clothing. 3) Clear the ground around the fire so the wind will be less likely to blow a spark and spread the fire. 4) Dig a trench in the ground if it is windy or if there are no rocks or logs to enclose the fire. Pile the dirt and sod to one side and replace it when you are finished. 5) Build small fires. 6) Break matches in two before throwing them away. By doing this, you can be pretty certain the match is completely out. 7) Never leave a fire unattended. If it were to get out of hand, there would be no one around to put it out.

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Student Activities	Teacher Suggestions
D. Types of Campfires	D. Types of Campfires
1. View sketches of a variety of ways to build a campfire. 2. Set up the materials in preparation for a campfire on the playground or in the classroom.	1. Appendix X contains sketches of a variety of campfires. Instruction for their use are included. Duplicate it and provide a copy to each student. 2. Discuss each type of campfire in terms of. 1) what it will be used for; 2) fuel that will be needed; and 3) difficulties in preparing the fire. 3. Bring together enough tinder, kindling, and fuel to let the students practice putting the material together in preparation for lighting the fire. Do not light the fire.
E. Putting Out a Campfire: A Discussion	E. Putting Out a Campfire: A Discussion
1. Discuss the proper way to put out a campfire.	1. Discuss with the students the importance of making sure that a campfire is completely out before leaving it. 2. Point out that one little spark in a clump of dry grass, sticks, or leaves can completely destroy a forest or grassland. These places serve as homes and provide food for wildlife. Also, many different kinds of wildlife are destroyed by such a fire. 3. Have the students list some steps they feel should be taken in extinguishing a campfire. Put their suggestions on the board for discussion. If someone suggests putting the fire out with water, ask them what they would use if no water were available. 4. After listing the students steps for extinguishing a campfire, write the following steps on the board and discuss. Compare the similarities and differences between the suggestions. Emphasize that these are really the proper ones to follow. 1) Let the fire die down as much as possible. 2) Knock logs apart, break up big pieces and scatter the coals.

Student Activities	Teacher Suggestions
	3) Stir the coals and douse them with water, then stir the coals again. Repeat this process until there are no live coals. If you have no water, put on sand or dirt and stir thoroughly. 4) When you can press your hand on the spot where the fire was, you know it is out. 5) Cover the extinguished fire with rocks or dirt and check carefully before you leave.

TOPIC IV: Fishing

Goal:

4. The students will be able to successfully use fishing equipment and participate in a fishing session on the field trip.

Student Activities	Teacher Suggestions
A. Fishy Stories: A Discussion	A. Fishy Stories: A Discussion
1. Tell about fish that you have caught--or almost caught!	1. Begin this session by talking of your fishing experiences if you have any. If not, ask for a show of hands of those that have been on fishing trips before. 2. Allow each student the time to tell of their fishing experiences. Find out: 1) what they caught; 2) kind of fish caught; 3) biggest fish caught; 4) kind of bait used; and 5) kind of equipment used (rod and reel or cane pole).
B. Fishing Equipment: A Discussion	B. Fishing Equipment: A Discussion
1. Assist the teacher in making up a list of equipment needed to fish.	1. Have the students help you make a list of items needed for fishing. As the students name an item, write it on the board and discuss it. 2. Discuss each item in light of: 1) Is it really necessary? (Some are purely luxury items--not really essential to pleasurable fishing). 3. The list of items should include: 1) Hooks (the size of hooks will vary with what you hope to catch--a bluegill cannot swallow a larger hook). 2) Line (monofilament for rod and reel--nylon for cane pole).

Student Activities	Teacher Suggestions
	3) Sinkers (usually necessary for bank fishing--sinkers come in different sizes and weights). 4) Bobbers (these are used extensively when fishing from the bank--they keep the hook off the bottom). 5) Rod and reel (many different kinds available--a certain amount of coordination required to use them successfully). 6) Cane pole (can be used to fish from shore--good for beginners). 7) Fish stringer (these are necessary to secure fish that have been caught. Stringers can be bought or made from ordinary fish line). 8) Tackle box (this need not be elaborate--it could be a can to carry extra hooks, sinkers, bobbers, and extra line).
C. Fishing License: A Discussion	C. Fishing License: A Discussion
1. Discuss the fishing license requirements.	1. Do not spend a great deal of time on this, however, the students need to be aware that there are fishing laws. 2. Mention to the students that some people must buy a license to fish (legally). Ask them to give their thoughts as to who these people are. 3. Appendix XI contains information on fishing license. This will aid your discussion. 4. Some questions that relate to the information in Appendix XI are: 1) Why does a person have to pay for a fishing license?; 2) Why don't kids under 16 years old have to buy a license?; 3) Where can you go to buy a license?; 4) If I am 16 years old and a game protector catches me fishing and I don't have a license--what will happen to me?; and 5) How often must I buy a license?

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TOPIC V. Archery

Goal:

5. The students will demonstrate an understanding of proper bow handling techniques and safety rules.

Student Activities	Teacher Suggestions
A. The Bow: A Discussion	A. The Bow: A Discussion
1. View an archery bow. Discuss its parts and how they function.	1. Use a bow to show its various parts. Discuss the function of each part in the firing of the bow. 2. Local teachers may obtain archery equipment by contacting the Topeka Environmental Education Project. 3. As the students view the bow, locate and name the following parts and explain their functions. 1) Bowstring - keeps tension on the bow, propels the arrow. 2) Handle - the thick area in the middle of the bow. One hand goes here to hold the bow. The arrow rests on the hand in this area too. 3) Nocks - notches on each end of the bow. This is where the string is attached.
B. The Arrow: A Discussion	B. The Arrow: A Discussion
1. View a target arrow. Discuss its parts and how they function.	1. Use the same procedures used in viewing and discussing the bow. 2. As the students view the arrow, locate and name the following parts and explain their functions. 1) Nock - the deep groove in the end of an arrow into which the bowstring fits. 2) Fletching (feathers) - helps guide the arrow during flight.

Student Activities	Teacher Suggestions
	3) Cock Feather - the odd colored feather. It is always positioned outward. 4) Target point - the sharp end of the arrow that enters the target. 5) Quiver - a device for holding arrows before use. There are ground quivers made of metal and there are shoulder quivers usually made of leather or plastic.
C. Archery Safety A Discussion	C. Archery Safety: A Discussion
1. Discuss safety rules that apply to archery.	1. Point out to students that any equipment can be dangerous if the people using it are careless. 2. Have the students list what they think are good archery safety rules. Be sure they include at least the following: 1) When shooting with a group, shoot only when told or when others are shooting. 2) Make sure the archery range is clear before shooting. 3) Retrieve arrows only when given the command to do so. 4) Shoot only into areas that you can clearly see. 5) Never shoot straight up. 6) Never shoot at objects that could cause the arrow to bounce off. 7) Never use a person as a target. 8) If you drop an arrow, leave it until the whole group is instructed to retrieve arrows.

Student Activities	Teacher Suggestions
D. Archery Techniques	D. Archery Techniques
1. Practice the stance and techniques of arming the bow.	1. In any sport there is a correct and incorrect way to use the equipment. By practicing and developing the correct technique for using the archery equipment, students will not only perform better, but will also gain more enjoyment. 2. The main thing for beginners is to be able to hit the target. Be sure to set the shooting line close enough to the target to insure reasonable success in hitting the targets. This may mean that the shooting line would only be ten feet from the targets for beginners. 3. Appendix XII contains instruction for archery target shooting. Some of these techniques can be practiced in the classroom without the use of arrows. This is very much like "dry firing" with air rifles.
E. Archery Scoring	E. Archery Scoring
1. Discuss archery scoring.	1. Appendix XIII is a sketch of a target used in archery. 2. Duplicate the appendix to provide copies for students and briefly discuss the scoring system. 3. From the outside inward, the point values are one, three, five, seven, and nine (bullseye). The color pattern from outer circle inward are white, black, blue, red, and gold. You may wish to have students color their diagrams. 4. If an arrow passes completely through the target it is given seven points. An arrow that rebounds from the target is worth seven points. An arrow that hits the line between two colors gets the higher point value. 5. Draw some target diagrams on the chalkboard. Place six points, representing arrows, on each of the targets and have the students determine the scores.

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TOPIC VI Tenting

Goal:

6. The students as a part of a three to four man team, will be able to pitch and take down a tent.

Student Activities	Teacher Suggestions
A. Tents: A Discussion	A. Tents: A Discussion
1. Look at pictures and sketches of different types of tents. Discuss each tent in terms of comfort, cost, use, and ease of handling.	1. Appendix XIV contains sketches of a variety of tents and shelters. Duplicate it for each student. 2. Collect pictures of tents not sketched in Appendix XIV. Catalogs and outdoor magazines are a good source for tent pictures. 3. Discuss each sketch and picture on the following merits: 1) What is its real purpose?; 2) How expensive is it?; 3) How hard would it be to handle?; 4) How many people will it accomodate? 4. Example: Sketch A shown in Appendix XIV is a shelter--not really a tent. It is not designed for real comfort. It's main function is to protect a camper from rain, snow, and possibly wind. It could be put up and taken down quickly. The cost of such a shelter would be low. 5. Appendix XIV also contains tips for handling tents. Discuss each one with the class.
B. Pup Tents: A Demonstration	B. Pup Tents: A Demonstration
1. Practice putting up and taking down a pup tent.	1. Borrow pup tents. National Guard units and scout troops are possible sources for such tents. Local teachers may obtain pup tents by contacting the Environmental Education Project. 2. Instruct the students to be aware of the number of each item needed with each tent: 1) ten stakes (for plugging tent to the ground); 2) two end posts (two sections to each pole); 3) two end ropes; and 4) two shelter

Student Activities

Teacher Suggestions

halves (they snap together to form the tent). A hammer or some type of pounding device will be necessary to drive the tent stakes into the ground.

3. Caution the students to keep the stakes, posts, and ropes together and accounted for. It is very easy to throw a stake or post down and lose them in the grass. When not in use, they should be put in one place where they can be seer easily.
4. Select three students to help you set up a tent. The rest of the class should observe. Explain each step in setting up and taking down the tent as you demonstrate it.
5. After the demonstration, divide the class into groups of three or four. Initially, it will probably take this many to handle the erection of the tent. Emphasize the importance of folding the tent up properly when it is taken down.
6. As time permits, you might allow the class to work with the tents in groups of two each. Since the pup tent is basically a two man tent this will be more of a realistic situation.

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TOPIC VII: Nature Through a Microscope

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Goal:

7. The students will demonstrate an understanding of the techniques involved in successfully using a microscope.

Student Activities	Teacher Suggestions
A. Why Use Microscopes: A Discussion 1. Discuss reasons for using microscope.	A. Why Use Microscopes: A Discussion 1. Set a microscope where all students can see it. Local teachers may obtain a microscope by contacting the Topeka Environmental Education Project Office. 2. Discuss these points: 1) Purpose of a microscope; 2) Are all microscopes the same?; 3) Are microscopes toys? 3. Microscopes are used in order to see things in greater detail, or in some cases, to see things that are too small for the eye to see without help. Microscopes magnify (enlarge) things and focus on certain points that are to be studied. 4. All microscopes work on the same principle, however, not all microscopes are alike. Some magnify to a much greater degree than others. 5. Most microscopes cost quite a bit of money. A person can buy one that might cost around $15.00. On the other hand, the more expensive ones can run into hundreds of dollars. 6. Emphasize that the microscopes that you have on display are designed to look at large objects such as insects and small rock (objects that do not allow light to shine through). Other microscopes are designed to view things that do let the light shine through such as water and blood. The latter are usually the most expensive.

Student Activities	Teacher Suggestions
	7. Point out that in buying a microscope one of the things to look for is how well the lens separates things from each other. Some lens magnify well but make things look a little fuzzy. Others may not magnify as great but makes things show up clearly. 8. A light source is always necessary for microscopes. This may be natural or artificial.
B. Using A Microscope	B. Using A Microscope
1. Practice using a microscope.	1. Use the microscopes from Activity A. Briefly explain the proper way to focus them. Also explain the proper way to use the eyepieces. 2. The focus adjustment on a microscope designed for insect viewing usually consists of a coarse adjustment knob only. This knob is located on the lower left hand side on the models used in this activity. On the more powerful microscopes there is usually a coarse adjustment plus a fine adjustment. It takes a great deal of skill to use the more powerful microscopes. 3. The microscopes you have are the stereo type (two eyepieces). Push the two eyepieces close enough together so that they fit the eyes. The eyes (both) should be held close to the eyepieces--but not pressed down on them. Let each eye look through its eyepiece in a normal way. The object being viewed should look as though you were using only one eyepiece. 4. Set up the three microscopes at different places in the classroom. Under one microscope place an insect of some sort (a cockroach is fun to look at). Under another, place a plant leaf. With the third microscope, let the students look at their finger tips (merely place the finger on the focus platform and turn the knob to focus). 5. Let the students spend some time at each microscope.

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Student Activities

Teacher Suggestions

6. Suggest to the students that they bring some things they would like to view under the microscopes. Allow some free times during the school day that they can make use of the microscopes to view the items they bring.
7. You may wish to show your students other types of microscopes such as the microprojector.

TOPIC VIII: The Field Trip

Overview of the Field Trip

The field trip for this unit will consist of two one-day trips to either the Outdoor Lab or Camp "Q" site at Lake Perry. The two outdoor sessions will be necessary in order to do all the planned activities. These two sessions should be staggered--the first trip coming on a Monday or Tuesday with the second scheduled the following Friday. There will be an optional overnight campout on Friday night. Local teachers that do the optional overnight campout should review the sections on clothes and food in the Camping Skills unit. Copies of this unit may be obtained from the Topeka Environmental Education Project. Each teacher whose class will be doing an overnight will need to meet with the project program specialist to develop plans for the necessary equipment and leadership.

The purpose of the field trip is to provide actual experience in those unit activities that the students have studied in the classroom. Transportation will be by means of a bus provided by the Environmental Education Project. The program specialist will be responsible for field trip arrangements and leadership. He will be assisted by the classroom teacher, paraprofessionals, and qualified volunteers, if needed.

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Tentative Field Trip Schedule

First Day

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Monday or Tuesday

8:30 a.m. Leave School

9:30 Arrive at site--use restrooms; divide into groups for activities.

10:00 Each group under the guidance of a leader will:

1) Select a site and practice putting up and taking down a pup tent.
2) Prepare their area for a campfire.
3) Gather firewood.
4) Build a campfire.
5) Prepare and eat the noon meal.
6) Extinguish campfire.
7) Clean up camp area.
8) Utilize microscopes to view items and organisms collected.

12.30 Each group under the guidance of their leader will:

1) Prepare fishing gear and bait.
2) Select an area and fish--stay close enough together so that the group leader can supervise easily.

2.00 Leave site--return to school.

Tentative Field Trip Schedule

Second Day

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Friday

9:30 a.m.	Leave School
9:30	Arrive at site--use restrooms; divide the class into three groups.
10:00	Group 1 - Boating Group 2 - Riflery Group 3 - Archery
11:00	Group 1 - Archery Group 2 - Boating Group 3 - Riflery
12:00	Lunch--Microscope (view items of nature as time permits).
1:00	Group 1 - Riflery Group 2 - Archery Group 3 - Boating
2:00	Leave site--return to school (for those classes not doing overnight campout).

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Tentative Field Trip Schedule

Overnight Campout

(A Continuation of Friday Field Trip)

3:00	Various Activities - Students may participate in one of these activities: 1) fishing; 2) boating; 3) riflery (BB guns); 4) archery; or 5) microscope work. A leader will be in direct supervision of each of these activities at all times during this period. Other activities can be planned upon student and/or leader request.
4:00	Prepare Camp Area - Each group under the supervision of its leader will: pitch tents; prepare fire areas; gather wood; build fires, prepare and eat evening meal; clean-up; extinguish fires (except main campfire).
6:30	Fishing and/or Microscope Work - Supervised by leaders--students may choose either activity.
8:00	Campfire Activities - Sing; stories; etc.
10:00	Bed Time
6:30 a.m.	Rise and Shine - Prepare one fire for morning meal. Cook--eat--clean up.
9:00	Prepare to leave site.
11:00	Leave site--return home.

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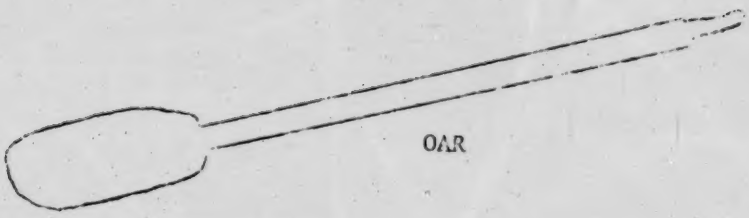
APPENDIX I

ROWBOAT EQUIPMENT



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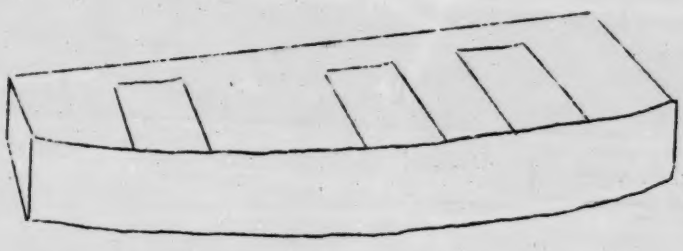
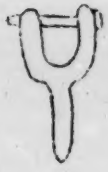


ROWBOAT



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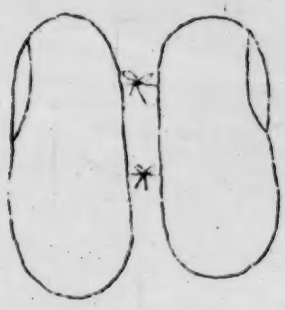
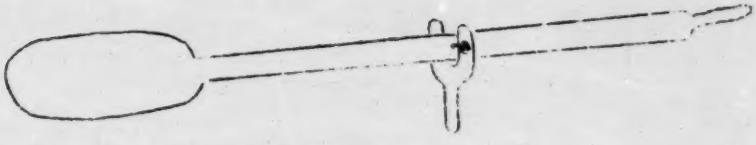


LIFEJACKET



OAR WITH OARLOCK

APPENDIX II

Boating Safety

Discuss each of the safety rules for boating listed below. These rules are not listed in order of importance.

1) Always wear a lifejacket! Kansas has a law that every person in a boat must have a lifejacket. Put the jacket on before entering the boat. Do not remove it until you leave the boat.
2) Never stand up in a boat. This applies primarily to small boats, such as canoes and rowboats. When you stand up in a small boat you have nothing to hold onto and keep your balance.
3) Sit in the middle of the seat. Sitting over to one side can cause the boat to overturn. Sitting in the middle of the seat will keep the boat evenly balanced.
4) Never "clown" around in a boat. Accidents happen quickly. Keep your mind on the boat and what you are trying to do with it.
5) If a boat overturns, stay with it. All boats are required by law to have flotation material built in to prevent their sinking. If a boat overturns, hold on and stay with it. Do not attempt to swim to shore as long as the boat is afloat.
6) Do not overload a boat. Too many people in a boat will cause it to overturn more easily.

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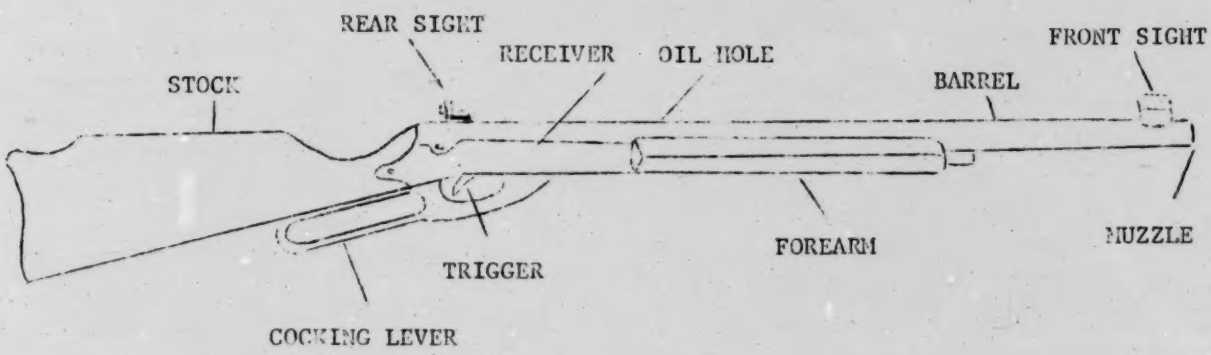
APPENDIX III

Parts Of A BB Rifle



STOCK - the part of the rifle that fits into the shoulder.

COCKING LEVER - loads the gun; makes it ready to fire.

TRIGGER - pull the trigger to fire the rifle.

REAR SIGHT - look through the rear sight to line front sight on the target.

RECEIVER - where the BB enters the firing chamber of the rifle.

OIL HOLE - add a few drops of oil here every 500 to 1000 shots.

FOREARM - one hand is placed here to steady the rifle.

BARREL - when the rifle is fired, the BB travels through the barrel.

FRONT SIGHT - the front sight (post) should be lined up on the target.

MUZZLE - the dangerous part of the rifle. This is the point where the BB leaves the barrel. Always know where the muzzle is pointing.

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APPENDIX IV

Gun Safety Rules

1. Treat every gun as if it were loaded and ready to shoot.
2. Never carry a gun into your home, camp or any public place loaded or cocked.
3. Always be sure your gun barrel is clean and not plugged.
4. Be sure of your target before you pull the trigger.
5. Never point a gun at anything you do not want to shoot. NEVER POINT A GUN AT ANYONE!
6. Guns not being used should always be unloaded.
7. Never climb a tree, fence or jump a ditch with a loaded gun.
8. Avoid richochet. Never shoot at a flat, hard surface, or the surface of water which may cause the bullet to rebound.
9. Respect other peoples property.

APPENDIX V

Air Rifle Target

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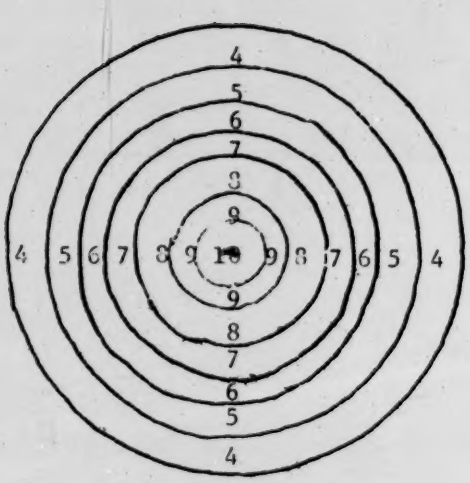
15 Foot Air Rifle Target



NAME _____

SCHOOL _____

5 SHOTS ONLY ON EACH TARGET.
SHOTS TOUCHING A SCORING RING
RECEIVE THE HIGHER VALUE.
SHOTS OUTSIDE THE SCORING RING
ARE SCORED AS MISSES.

APPENDIX VI

FIRING POSITIONS

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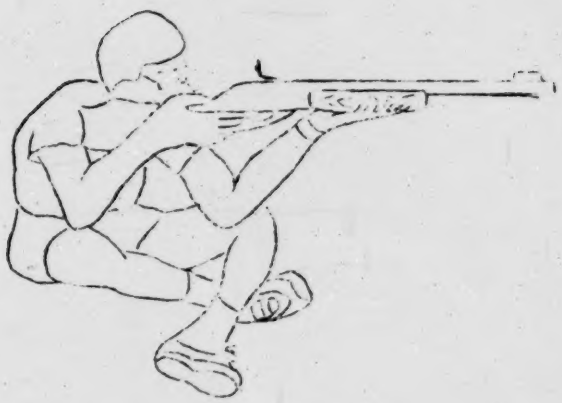
SITTING



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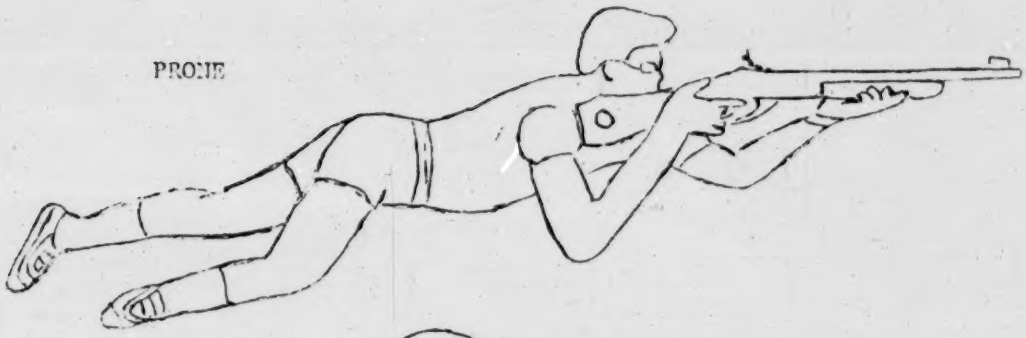

STANDING

APPENDIX VII

Setting Up a Firing Range

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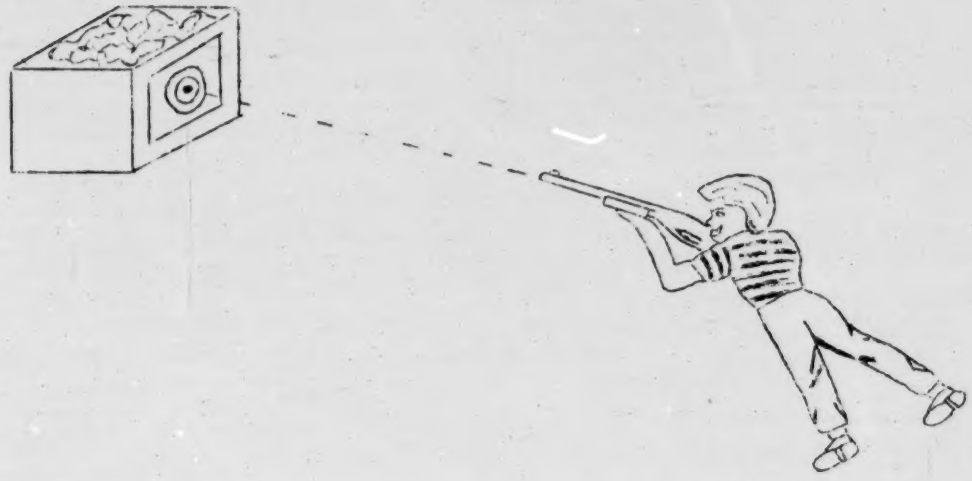
The range or shooting area requires a very small amount of space.

1. The required area, indoor or outdoor, of shooting distance should measure 15 feet, from end of muzzle to face of target.
2. The backstop should be from two to four feet behind the target.
3. The firing line should have a four foot area for each shooter.
4. The number of shooting positions (firing points) may range from four to ten depending on available space.

Range equipment includes the following materials:

1. Backstops - corrugated cardboard boxes, measuring twelve inches or more in depth and at least two foot square front surface. These boxes serve as backstops, target holders and BB traps.
2. The boxes may be filled with: 1) crumpled newspapers, packed tightly; 2) medium weight canvas hung freely from inside center of box; and 3) as an additional precaution against a stray shot, and ricochet, hang a large piece of canvas or bed sheet as a backdrop, behind the boxes.
3. Avoid target ranges that allow ricochet of BBs. See that the target face is large enough for the shooter to always hit or provide a backstop such as a blanket or canvas. NEVER FIRE A BB GUN AT A HARD SURFACE.



APPENDIX VIII

Selecting and Preparing A Campfire Area

Selecting the Fire Area

The place to build a fire depends on:

1. Where you are - in some situations you may not have much choice in selection of a fire area. All the sites may be similar. Use the one that is best.

2. The kind of fire you need - if you are going to cook, a small fire may do. If you need a fire for warmth, it may need to be quite large. A small fire can be built safely in a variety of areas but areas for a warming fire may be limited.

3. The availability of fuel - you will want to build fires fairly near a supply of fuel (wood).

4. Weather - in rain, snow, or a strong wind, look for a natural shelter such as rocks, cliffs, caves, a sheltered ravine, or a clump of trees.

Preparing the Fire Area:

When the fire site is found:

1. Scrape the ground bare of leaves, grass, or any other burnable material.

2. If the fire is built near a tree, take away overhanging branches which may catch fire from flying sparks.

3. Avoid building a fire on the roots of a tree. To do so might possibly damage the tree.

4. Set tools (shovel, bucket of water) nearby to extinguish the fire should it get out of hand.

APPENDIX IX

Campfire Wood

You will probably be using whatever you find around when you first begin to light fires. As you progress, you will learn about certain types of wood, and which are best for certain purposes. Here are a few hints to help you make a woodpile that will be useful--

1. Wood for kindling should SNAP when broken. In general, dead branches from lower limbs of trees make the best kindling. Sticks lying on the ground may be damp.

2. Tinder may be anything that is very light and dry--not any thicker than a match. Make little bundles of tiny twigs.

3. Sticks that bend and do not snap are green: use only after a hot fire is started.

4. Wood that crumbles is rotten. (You'll find lots around--don't bother with it.) It has lost all its life and will just smoulder and smoke without giving off any heat.

5. Split wood burns well; the inside of a log is drier than the outside.

6. In wet weather, depend on dead branches on trees; they dry sooner than wood on the ground, as the air can get all around them.

APPENDIX X

TYPES OF CAMPFIRES

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Location

The place to build the fire depends upon where you are, the kind of fire you need and the weather. The nearness of wood (or fuel) is also important. If the weather is clear with little wind, any desirable place will do. If there is rain, snow, or a strong wind, try to find some natural shelter such as rocks, cliff, cave, or clump of trees or the side of a sheltered ravine.

When the place is found, scrape the ground bare of leaves, grass or any other burnable material. Take away overhanging branches which may catch fire from flying sparks.

Laying the Fire:

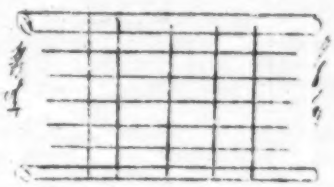
The Teepee Fire, the Crisscross Fire, the Hunter's Fire, and the Tin Can Fire are explained below.

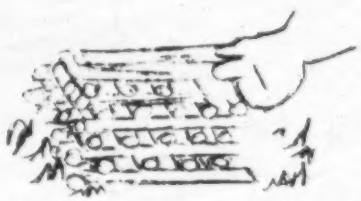
Select the method described below which best fits your situation.

THE TEEPEE FIRE:

In the teepee fire, tinder is used as a base. Fine twigs are arranged around it to form a teepee. Split sticks are gradually increased in size and length until the fire is built to the desired size. The heavier wood is placed down wind and the fire is lit on the windward side.

THE CRISSCROSS FIRE:





To make a crisscross fire, place two heavier pieces of wood approximately a foot long and as thick as your ankle on the ground eight or ten inches apart. Place a big handful of tinder between these sticks. Then lay fine twigs across the two heavy sticks above the tinder until the space is filled with sticks about one inch apart. Next lay slightly heavier twigs on top of the first layer at right angles to it. The third layer is of slightly heavier sticks and is placed at right angles to them. This type of fire is lit on the windward side.

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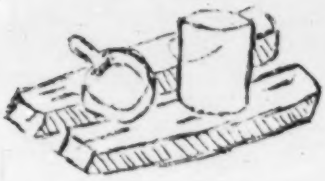
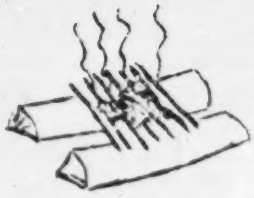
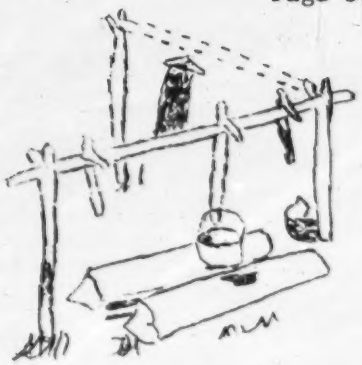
THE HUNTER'S FIRE:







This is a cooking fire. Two small logs from three to six inches in diameter are laid side by side quartering into or at right angles to the wind. A space slightly smaller than the diameter of the cooking utensils separates these logs. The logs can be laid at an angle to one another, to accommodate several different sizes of frying pans or kettles at the same time. If the fire is for one or two meals, any logs will do--even those that are partially decayed. If the fire is to be used for several days, green logs will probably last the full time, without replacement. Logs should be flattened on the top side, so that the utensils will be less likely to upset. Kindling the fire the full length of the logs, makes it possible to cook several things at once. The fire may be controlled by use of a stick, or a rock for a chuck under the log on the windward side. If the log is raised, the air circulates underneath to fan the fire into an intense heat. The heat will die down if the log is lowered to the ground. A slow fire will result from scraping earth or sand against the outside of both logs to cut off all draft.

Garbage can be quickly disposed of by drying it on a grill made of a few sticks across the fire logs. When completely dried, it is dropped into the fire, where it will burn without odor.

The Hunter's Fire may be rapidly changed into a baking fire by driving stakes on the outside of one of the fire logs and rolling the other on top. When logs are not available, this type of fire may be made by arranging sod or rocks in a way similar to the two logs.

TIN CAN FIRE:

A small steady fire in a stove made of a tin can.

Start with a small fire of tinder. Have a supply of sticks no bigger than thumb (for a #10 stove). Keep fire small, and feed steadily with small twigs. Needs plenty of air; keep extra tinder handy for bolstering up!

Move can in place when fire is going. Tin can cookery needs two persons--one to cook, the other to feed fire.

Cut door; punch holes in opposite sides for draft; heat top grease and wipe off; then grease again and fry on top.

APPENDIX XI

Fishing License Information

1. Anyone under sixteen years of age may legally fish without buying a fishing license.

2. In Kansas, senior citizens, age sixty-five and over, may legally fish without buying a license.

3. From age sixteen to sixty-five a person, male or female, must buy a license to fish legally.

4. In Kansas, a fishing license costs $3.50 per year.

5. A fishing license can be obtained in various places of business. Bait shops, sporting goods stores, and hardware stores often sell them.

6. The money obtained through the sale of fishing licenses is used by the State Game and Fish Commission to improve fishing conditions in lakes and streams throughout Kansas.

APPENDIX XII

Archery Techniques

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In any sport there is a correct and an incorrect way to use the equipment. By learning and following the correct technique for handling and using the archery equipment, students will not only perform better, but will also gain more enjoyment from archery.

The directions provided are designed for groups, but most are still true if an individual is by himself.

1) Location. Stand behind the shooting line in preparation for shooting.

2) Stance. Right-handed archers should stand with their left side toward the target. Feet should be shoulder width apart, and the body weight should be distributed evenly. Stand with the body erect and relaxed.

3) Nocking. After all people are behind the shooting line, the leader will give the signal to nock your arrow. You do this by placing the nock of the arrow over the middle area of the bowstring. Grasp the bowstring with the first three fingers with the arrow between the index and second finger. The forward end of the arrow should be on the arrow rest just above the handle. The second hand should be placed on the handle. Do not grip the handle, but push outward slightly until ready to shoot. The archer should hold the bow parallel to the ground and next to his hip until given the command to shoot.

4) Drawing. Draw the arrow only when the leader gives the command to draw. Draw the arrow by raising the bow arm to shoulder height and holding it straight, but not locked. Keep your head facing the target. Draw the bowstring backward toward the center of the chin. The thumb and little finger of the bowstring hand should not touch the bowstring, and the bow hand should be pushing the bow, not gripping it.

5) Release. Do not release the arrow until the leader gives the command to shoot. When the archer is ready to shoot, release the arrow by relaxing the drawing fingers.

6) Follow-through. Follow-through means holding the release position until the arrow is safely imbedded in the target. This prevents body movement from affecting the arrow's direction.

7) Retrieving. Archers should not retrieve their arrows until everyone has shot and the leader gives the command to retrieve. When removing an arrow from the target, place your finger on the target face next to the arrow before pulling the arrow out.

APPENDIX XIII

ARCHERY TARGET

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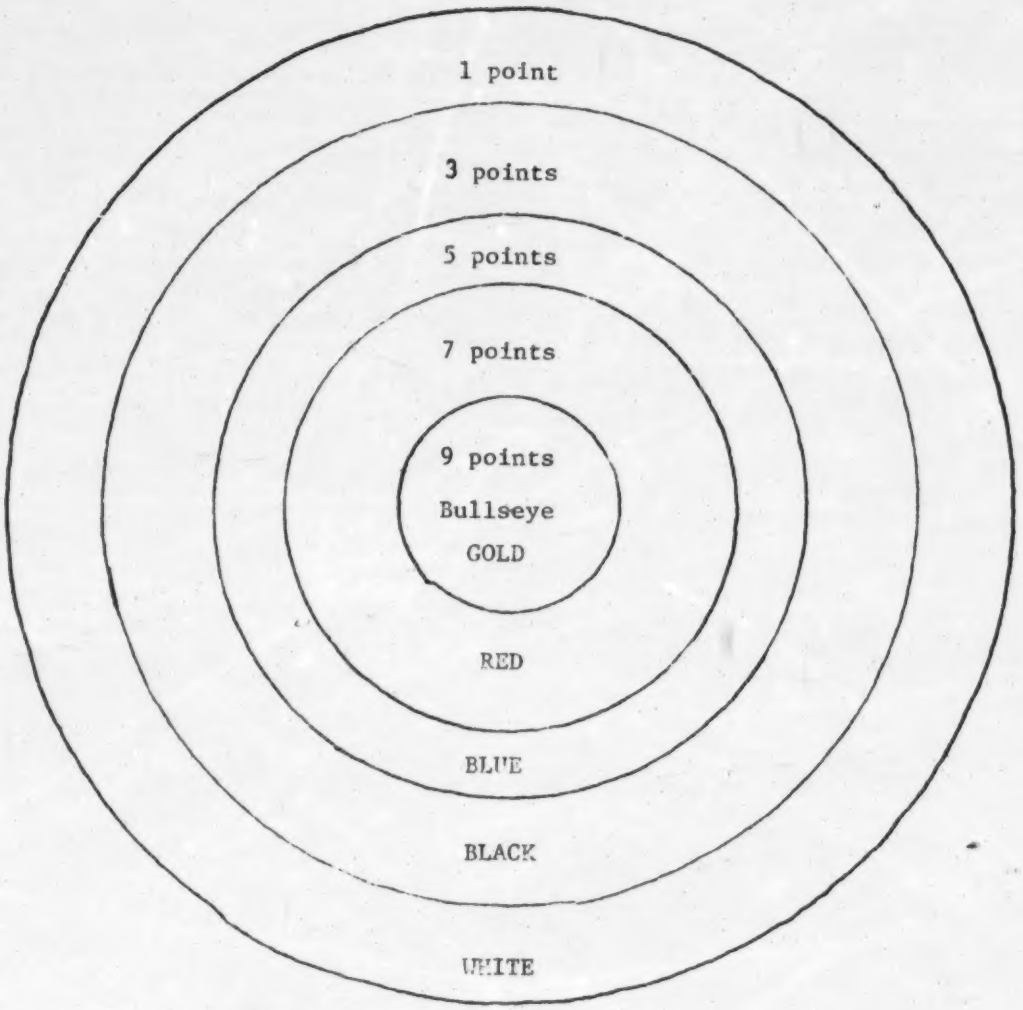

APPENDIX XIV

TENTS

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Some good things to know about CANVAS:

Pins in canvas make holes for the rain to come through and may start tears.

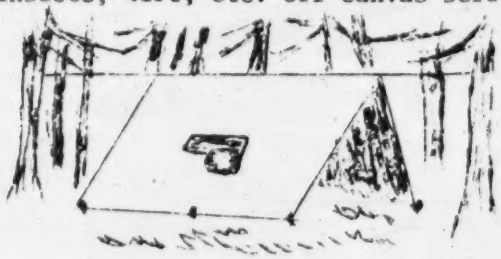
Running the finger or foot down the roof of the tent when it is wet will break the air bubbles that make the canvas waterproof, and there will be a leak.

Canvas mildews when rolled up damp. After a rain, let the sides and flaps dry before rolling them again.

Canvas and ropes shrink when wet, so ropes should be loosened at the beginning of a storm, and tightened afterwards. Pull ropes evenly on both sides to keep the tent looking trim.

The tent should fit loosely when dry, so the sides may be pegged down to floor or floor pegs easily.

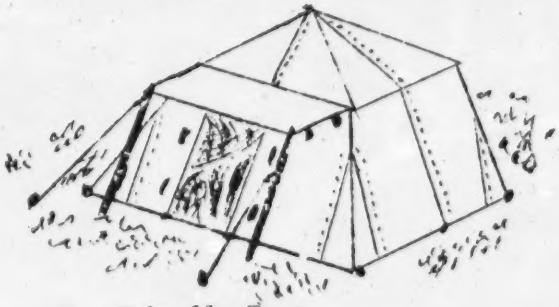
When folding tents, be sure the canvas is dry. Let sun shine on the canvas for two hours after dew has disappeared. Fold on seams smoothly. Brush cobwebs, insects, dirt, etc. off canvas before folding.



A. Poncho Shelter

B. Explorer's Tent

C. Pup Tent



D. Umbrella Tent

APPENDIX XV

Enjoying The Environment Evaluation Form

Student_____ Date_____
School_____

Activity	Skill Rating	Safety Rating	Comments
Boating			
Firebuilding			
Tent Pitching			
Fishing			
Riflery (BB)			
Archery			
Use of Microscopes			

NOTE

Skill Rating - This signifies the degree of proficiency exhibited by the student as viewed by the leader.

Safety Rating - The safety knowledge may be determined by oral questioning as well as observation of actions during participation.

RATING

✓ = Used most skills taught in the unit adequately. Has knowledge of and/or practices safety rules taught.

○ = Skill or safety practice and/or knowledge not acceptable.

✗ = Did not participate.